

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 February 2004 (12.02.2004)

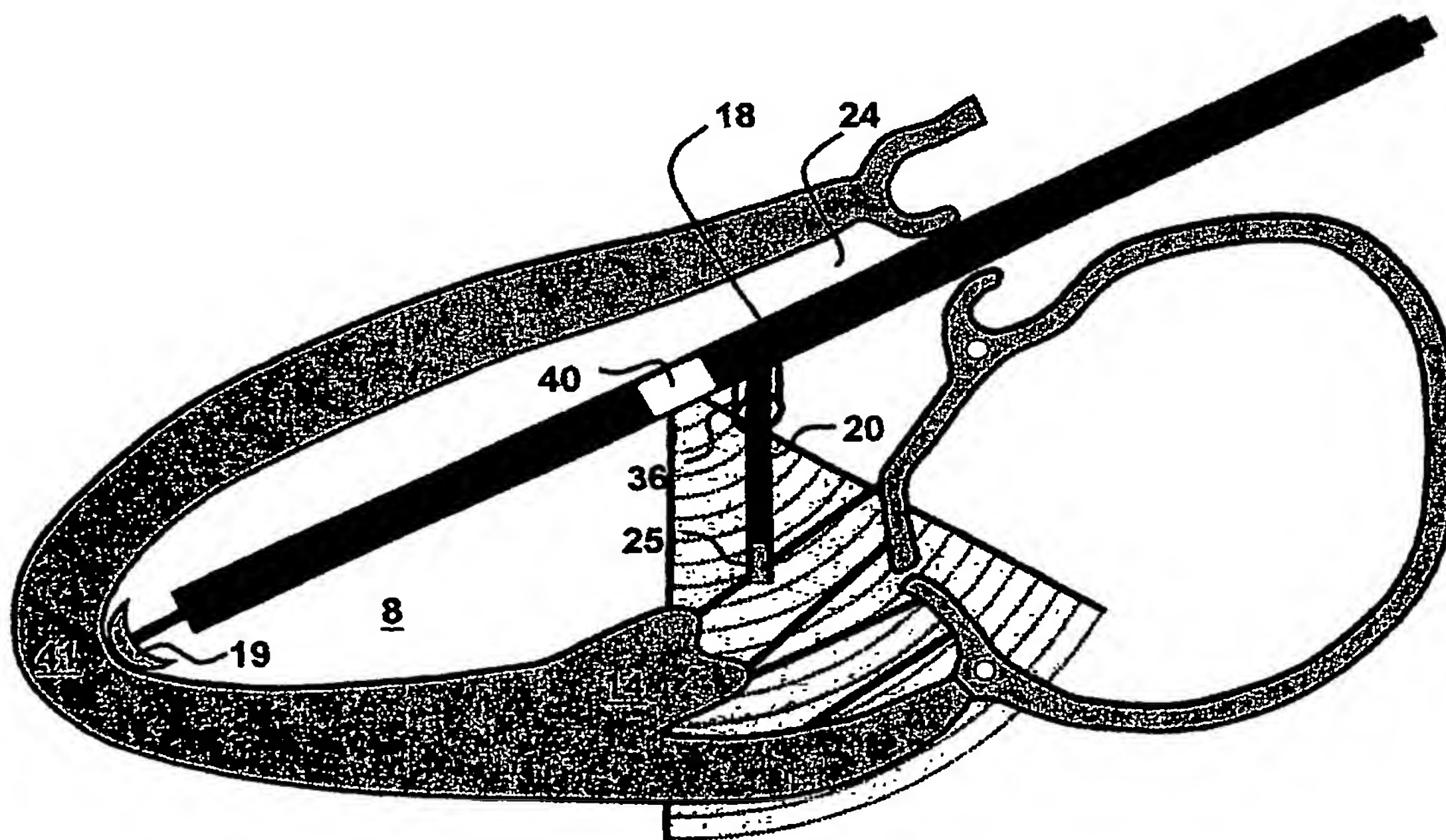
PCT

(10) International Publication Number
WO 2004/012583 A3

- (51) International Patent Classification⁷: **A61B 19/00**
- (21) International Application Number: **PCT/US2003/024367**
- (22) International Filing Date: **1 August 2003 (01.08.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:
60/400,151 **1 August 2002 (01.08.2002)** **US**
- (71) Applicant (for all designated States except US): **THE GENERAL HOSPITAL CORPORATION [US/US]; 32 Fruit Street, Boston, MA 02114 (US).**
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LEVINE, Robert, A. [US/US]; 60 Longwood Avenue, #1010, Brookline, MA 02446 (US). MESSAS, Emmanuel [FR/FR]; 9 ter rue de Boulainvilliers, F-75016 Paris (FR).**
- (74) Agents: **COHEN, Jerry et al.; Perkins, Smith & Cohen, LLP, One Beacon Street, Boston, MA 02108 (US).**
- (81) Designated States (national): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (regional): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**
- Published:
— with international search report

[Continued on next page]

(54) Title: **CARDIAC DEVICES AND METHODS FOR MINIMALLY INVASIVE REPAIR OF ISCHEMIC MITRAL REGURGITATION**



(57) Abstract: Novel apparatus and minimally invasive methods to treat atrioventricular valve regurgitation that is a result of tethering of chordae attaching atrioventricular valve leaflets to muscles of the heart, such as papillary muscles and muscles in the heart wall, thereby restricting the closure of the leaflets. Catheter embodiments for delivering and positioning chordal severing and elongating instruments are described.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/24367

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61B 19/00
US CL : 128/898; 606/001

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 128/898; 606/001

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US2003/0120341 A1 (Shennib et al) 26 June 2003 (26.06.2003), See entire document.	
A	US 2002/0013571 A1 (Goldfarb et al) 31 January 2002 (31.01.2002), See entire document.	
A, E	US 6,629,534 B1 (St. Goar et al) 07 October 2003 (07.10.2003), See entire document.	
A	US 6,355,030 B1 (Aldrich et al) 12 March 2002 (12.03.2002), See entire document.	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

12 February 2004 (12.02.2004)

Date of mailing of the international search report

24 MAR 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Linda C. Dvorak

Telephone No. (703) 308-0858



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:
6 May 2004